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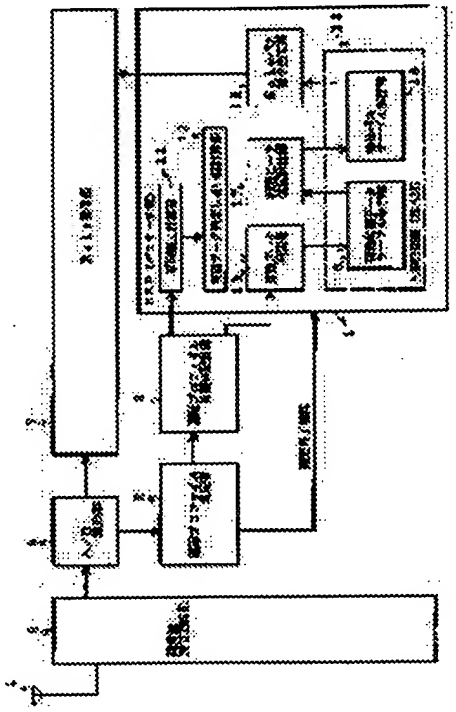
EIVER, PATH DETECTION METHOD USED THEREFOR AND RECORDING MEDIUM RECORDED . PROGRAM THEREFOR



: SOLVED: To provide a CDMA receiver capable of ɔrtening the processing amount of the arithmetic ath search part, reducing current consumption, ware constitution and improving follow-up ability to the path.

average power calculation part 11 of a DSP 1 calculates ver of a delay profile and a valid data judgement ation part 12 calculates a valid data judgement threshold ther or not the correlation data of the delay profile are id path based on the average power. A valid data 13 judges the valid data of the delay profile based on the ment threshold, selects only valid correlation data and in a valid correlation data table preservation part 15. A position detection part 17 detects the positions of plural correlation peaks and preserves them ɪth table preservation part 16. A Rake path allocation part 18 decides path allocation to a Rake

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CDMA receiving set including the Rake receiving circuit which carries out inphase composition of the o or more pass. The delay profile which shows the signal power distribution over the time delay of s measured. Presume an interference wave power value based on said measured delay profile, and an xtracted out of said delay profile based on said presumed interference wave power value. The CDMA acterized by constituting so that two or more correlation peak locations may be detected from said e data and the pass assignment to said Rake receiving circuit may be determined based on said the ocation.

tract of said effective data is a CDMA receiving set according to claim 1 characterized by constituting profile may be performed as compared with said interference wave power value.

ption of said interference wave power value is a CDMA receiving set according to claim 1 or 2 constituting so that it may carry out by calculating the multiplier which computed the mean power of and was beforehand set as said computed mean power.

ultiplier is a CDMA receiving set according to claim 3 characterized by setting up beforehand so that ave power components with a low correlation value may become said under interference wave power ay profile.

1 to claim 4 characterized by constituting so that an effective data may be extracted out of said delay said interference wave power value used by the last processing when change of the receiving ie input signal concerned was detected for every input of said input signal and it was detected that e of said receiving environment is the CDMA receiving set of a publication either.

DMA receiving set according to claim 3 or 5 characterized by constituting so that the mean power of may be computed except for the data of the delay profile corresponding to the pass assigned to said rcuit.

1 to claim 6 characterized by constituting so that maximum retrieval of said delay profile may be the extract of said effective data at the time of presumption of said interference wave power value data may be extracted out of said delay profile based on either [at least] said interference wave ie retrieval result of said maximum retrieval is the CDMA receiving set of a publication either.

CDMA receiving set including the Rake receiving circuit which carries out inphase composition of the o or more pass. The delay profile which shows the signal power distribution over the time delay of is measured. Compute the mean power value of said measured delay profile, and an effective data is aid delay profile based on said computed mean power value. The CDMA receiving set characterized that two or more correlation peak locations may be detected from said extracted effective data and ent to said Rake receiving circuit may be determined based on said the correlation peak location.

tract of said effective data is a CDMA receiving set according to claim 8 characterized by constituting profile may be performed as compared with said mean power value.

CDMA receiving set according to claim 8 or 9 characterized by constituting so that an effective data out of said delay profile based on said mean power value used by the last processing when change of ironment of the input signal concerned was detected for every input of said input signal and it was e is no change of said receiving environment.

DMA receiving set according to claim 10 characterized by constituting so that the mean power of said be computed except for the data of the delay profile corresponding to the pass assigned to said Rake

ıy profile measurement means to measure the delay profile which is a CDMA receiving set including g circuit which carries out inphase composition of the input signal of two or more pass, and shows the ibution over the time delay of said input signal, A presumed means to presume an interference wave d on said delay profile measured with said delay profile measurement means, An effective-data extract an effective data based on the interference wave power value presumed with said presumed delay profile measured with said delay profile measurement means, A correlation peak location ɔ detect two or more correlation peak locations from said effective data extracted with said effective-ıs, The CDMA receiving set characterized by having a Rake pass quota means to determine the pass d Rake receiving circuit based on said correlation peak location detected with said correlation peak means.

xtract means is a CDMA receiving set according to claim 12 characterized by constituting so that said y be extracted as compared with said interference wave power value presumed with said presumed ay profile measured with said delay profile measurement means.

resumed means is a CDMA receiving set according to claim 12 or 13 characterized by including a ılation means to compute the mean power of said delay profile measured with said delay profile ıns, and a means to calculate the multiplier beforehand set as said mean power computed with said ılation means, and to presume said interference wave power value.

ıultiplier is a CDMA receiving set according to claim 14 characterized by setting up beforehand so ɔe wave power components with a low correlation value may become said under interference wave ıid delay profile.

12 to claim 15 characterized by including an effective-data maintenance means to hold said effective h said effective-data judging means, and a detection pass maintenance means to hold two or more ocations detected with said correlation peak location detection means is the CDMA receiving set of a

12 to claim 16 characterized by constituting so that an effective data may be extracted out of said d on said interference wave power value used by the last processing when it was detected including a hange of the receiving environment of the input signal concerned for every input of said input signal ıange of said receiving environment is the CDMA receiving set of a publication either.

DMA receiving set according to claim 17 characterized by constituting so that the mean power of said be computed except for the data of the delay profile corresponding to the pass assigned to said Rake

resumed means includes a maximum retrieval means to perform maximum retrieval of said delay with said delay profile measurement means before carrying out an effective judging with said lging means. So that said effective-data judging means may extract said effective data based on either terference wave power value or the retrieval result of said maximum retrieval means out of said delay with said delay profile measurement means Claim 12 to claim 18 characterized by constituting is the set of a publication either.

ay profile measurement means to measure the delay profile which is a CDMA receiving set including ıg circuit which carries out inphase composition of the input signal of two or more pass, and shows the ribution over the time delay of said input signal, A calculation means to compute the mean power ıy profile measured with said delay profile measurement means, An effective-data judging means to ve data out of said delay profile based on said mean power value computed with said calculation tion peak location detection means to detect two or more correlation peak locations from said effective th said effective-data judging means, The CDMA receiving set characterized by having a Rake pass etermine the pass assignment to said Rake receiving circuit based on said correlation peak location d correlation peak location detection means.

effective-data judging means is a CDMA receiving set according to claim 20 characterized by delay profile so that said effective data may be extracted as compared with said mean power value.

DMA receiving set according to claim 20 or 21 characterized by constituting so that an effective data out of said delay profile based on said mean power value used by the last processing when it was ; a means to detect change of the receiving environment of the input signal concerned for every input il that there is no change of said receiving environment.
DMA receiving set according to claim 22 characterized by constituting so that the mean power of said be computed except for the data of the delay profile corresponding to the pass assigned to said Rake

ep which measures the delay profile which is the pass detection approach of a CDMA receiving set e receiving circuit which carries out inphase composition of the input signal of two or more pass, and power distribution over the time delay of said input signal, The step which presumes an interference : based on said the measured delay profile, The step which extracts an effective data out of said delay his presumed interference wave power value, The pass detection approach characterized by having the s two or more correlation peak locations from said extracted effective data, and the step which ss assignment to said Rake receiving circuit based on said detected correlation peak location.
ep which extracts said effective data is the pass detection approach according to claim 24
extracting said effective data for said delay profile as compared with said interference wave power

ep which presumes said interference wave power value is the pass detection approach according to aracterized by including the step which computes the mean power of said measured delay profile, and lculates the multiplier beforehand set as said computed mean power, and presumes said interference
.
nultiplier is the pass detection approach according to claim 26 characterized by setting up beforehand ence wave power components with a low correlation value may become said under interference wave id delay profile.
24 to claim 27 characterized by including the step holding said extracted effective data and the step cted correlation peak location is the pass detection approach of a publication either.
24 to claim 28 characterized by including the step which extracts an effective data out of said delay aid interference wave power value used by the last processing when it was detected that there are not cts change of the receiving environment of the input signal concerned for every input of said input e of said receiving environment is the pass detection approach of a publication either.
ass detection approach according to claim 29 characterized by including the step which computes the id delay profile except for the data of the delay profile corresponding to the pass assigned to said ircuit.
ie step which presumes said interference wave power value, claim 24 to claim 30 characterized by to tive data out of said measured delay profile including the step which performs maximum retrieval of lay profile before extracting said effective data based on either [at least] said interference wave ie retrieval result of said maximum retrieval is the pass detection approach of a publication either.
tep which measures the delay profile which is the pass detection approach of a CDMA receiving set ce receiving circuit which carries out inphase composition of the input signal of two or more pass, and power distribution over the time delay of said input signal, The step which computes the mean power measured delay profile, The step which extracts an effective data out of said delay profile based on ean power value, The pass detection approach characterized by having the step which detects two or peak locations from said extracted effective data, and the step which determines the pass assignment iving circuit based on said detected correlation peak location.
tep which extracts said effective data is the pass detection approach according to claim 32
extracting said effective data for said delay profile as compared with said mean power value.
ass detection approach according to claim 32 or 33 characterized by including the step which extracts out of said delay profile based on said mean power value used by the last processing when it was e are not a step which detects change of the receiving environment of the input signal concerned for id input signal, and change of said receiving environment.
ass detection approach according to claim 34 characterized by including the step which computes the

id delay profile except for the data of the delay profile corresponding to the pass assigned to said rcuit.

ıe record medium which recorded the pass detection control program for making pass detection puter in a CDMA receiving set including the Rake receiving circuit which carries out inphase e input signal of two or more pass. Said pass detection control program makes the delay profile which power distribution over the time delay of said input signal to said computer measure. An interference ɜ is made to presume based on said the measured delay profile. An effective data is made to extract profile based on this presumed interference wave power value. The record medium which recorded control program characterized by making the pass assignment to said Rake receiving circuit ɔn said correlation peak location which was made to detect two or more correlation peak locations, from said extracted effective data.

ıe record medium which recorded the pass detection control program for making pass detection puter in a CDMA receiving set including the Rake receiving circuit which carries out inphase e input signal of two or more pass. Said pass detection control program makes the delay profile which power distribution over the time delay of said input signal to said computer measure. Make the mean ıid that measured delay profile compute, and an effective data is made to extract out of said delay his computed mean power value. The record medium which recorded the pass detection control rized by making the pass assignment to said Rake receiving circuit determine based on said ocation which was made to detect two or more correlation peak locations, and was detected from said e data.

:.]

CRIPTION

tion of the Invention]

ntion] About the record medium which recorded the control program on the pass detection approach MA receiving set and it, this invention measures especially a delay profile and relates to the pass h that are in the measuring range and signal power chooses some large pass.

e Prior Art] DS-CDMA (Direct Sequence - Code Division Multiple Access: direct diffusion-code access standard) is a method with which two or more operators communicate using the same nd is performing discernment of each operator using the diffusion sign.
communication, since each received wave propagation way length of multiple wave propagation has ltiple wave from which propagation delay time differs interferes each other. Since a period carries n of the information data with the diffusion sign of the rate of a short high speed rather than a in a DS-CDMA communication link, each multiple wave from which this propagation delay time iate and extract.
obile station is changed to a base station, it carries out time variation also of this delay profile (signal n over a time delay). moreover -- the place whose signal of each pass is not a prospect -- Rayleigh -- it

re Rayleigh from whom this propagation delay time that carried out time amount separation differs in munication link -- the multi-pass signal to change is gathered up, by carrying out inphase e composition), a diversity effect is acquired and a receiving property improves. Or since transmitted uced according to the diversity effect accompanying Rake composition to fixed receiving quality (bit ore the interference power to other users in the same cel and besides a cel decreases, the subscriber stant frequency band can be increased.
as mentioned above, in order that a mobile station may carry out relative fluctuation to a base station, d the time delay of the pass which should be changed and carried out Rake composition are changed. migration communication environment, it follows to fluctuation of a delay profile and the multi-pass ng function which can carry out Rake composition to two or more pass with which the maximum n instant is obtained are needed for a receiver.
ple, as the above-mentioned CDMA receiving set, as shown in drawing 22 , there are some which nulti-pass search section (multi-pass detection means) 24 by communication environment and a Rake ive section 25 which does inphase composition (RAKE composition) of two or more pass. In addition, and 22 show the high frequency receiving-circuit section, and 23 shows the A/D (analog/digital) tively.
ventional CDMA receiving system which has such a configuration, by the multi-pass search section e (signal power distribution over a time delay) is measured, and it is in measuring range, and signal me large pass and notifies the Rake composition receive section 25 of the timing of the pass. In the n receive section 25, back-diffusion of gas is performed for every pass based on the timing a pass diversity effect is acquired by carrying out Rake composition.
, although it may have a means (Pasto racking) to follow to the movement toward the pass specified

Rake composition receive section 25, the multi-pass search section 24 needs to tell the Rake
ve section 25 about pass information for every first stage or fixed period at least. It is indicated by
ɔ. about this CDMA receiving set and the multi-pass search approach.

Solved by the Invention] In the conventional CDMA receiving set mentioned above, by the multi-
n, the delay profile was measured, and it is in measuring range, and signal power chose some large
ied the Rake composition receive section of the timing of the pass.
generally, a delay profile has many data, and since the processing which discovers a peak from all
nount, only a number of pass of parts discovered in order to discover some multi-passes from the
rofile need to carry out maximum retrieval, or it needs to carry out sorting application of all profile

in performing maximum retrieval using DSP (digital signal processor) etc., while the processing
t, the consumed electric current increases. Moreover, in realizing maximum retrieval by hardware,
ecomes large, and the optimal means which discovers a required number of correlation peaks from a
eded.
in offering the record medium which recorded the control program on the pass detection approach list
[A receiving set and it which can raise the flattery nature to fluctuation of pass while the object of this
cel the above-mentioned trouble, can shorten the throughput of the operation of the pass search
lly and can attain cutback of the consumed electric currents, and simplification of a hardware

ıg the Problem] The CDMA receiving set by this invention is a CDMA receiving set including the
rcuit which carries out inphase composition of the input signal of two or more pass. The delay profile
signal power distribution over the time delay of said input signal is measured. Presume an interference
ɜ based on said measured delay profile, and an effective data is extracted out of said delay profile
sumed interference wave power value. It constitutes so that two or more correlation peak locations
rom said extracted effective data and the pass assignment to said Rake receiving circuit may be
on said the correlation peak location.
MA receiving sets by this invention are CDMA receiving sets including the Rake receiving circuit
inphase composition of the input signal of two or more pass. The delay profile which shows the
ribution over the time delay of said input signal is measured. Compute the mean power value of said
rofile, and an effective data is extracted out of said delay profile based on said computed mean power
es so that two or more correlation peak locations may be detected from said extracted effective data
gnment to said Rake receiving circuit may be determined based on said the correlation peak location.
DMA receiving set by this invention is a CDMA receiving set including the Rake receiving circuit
inphase composition of the input signal of two or more pass. A delay profile measurement means to
y profile which shows the signal power distribution over the time delay of said input signal, A
to presume an interference wave power value based on said delay profile measured with said delay
ıent means, An effective-data judging means to extract an effective data based on the interference
e presumed with said presumed means out of said delay profile measured with said delay profile
ans, A correlation peak location detection means to detect two or more correlation peak locations from
a extracted with said effective-data judging means, It has a Rake pass quota means to determine the
to said Rake receiving circuit based on said correlation peak location detected with said correlation
ection means.
DMA receiving set to the pan by this invention A delay profile measurement means to measure the
ch is a CDMA receiving set including the Rake receiving circuit which carries out inphase
ıe input signal of two or more pass, and shows the signal power distribution over the time delay of saic
ılculation means to compute the mean power value of said delay profile measured with said delay
ıent means, An effective-data judging means to extract an effective data out of said delay profile based
ver value computed with said calculation means, A correlation peak location detection means to detect
elation peak locations from said effective data extracted with said effective-data judging means, It has

. means to determine the pass assignment to said Rake receiving circuit based on said correlation peak with said correlation peak location detection means.

ietection approach of the CDMA receiving set by this invention The step which measures the delay ıe pass detection approach of a CDMA receiving set including the Rake receiving circuit which e composition of the input signal of two or more pass, and shows the signal power distribution over said input signal, The step which presumes an interference wave power value based on said the rofile, The step which extracts the value beyond this presumed interference wave power value out of measured above, It has the step which detects two or more correlation peak locations from the value cted interference wave power value, and the step which determines the pass assignment to said Rake ıased on said detected correlation peak location.

ietection approach of the CDMA receiving set by this invention The step which measures the delay ıe pass detection approach of a CDMA receiving set including the Rake receiving circuit which e composition of the input signal of two or more pass, and shows the signal power distribution over said input signal, The step which computes the mean power value of said the measured delay profile, ctracts an effective data out of said delay profile based on said computed mean power value, It has the s two or more correlation peak locations from said extracted effective data, and the step which ss assignment to said Rake receiving circuit based on said detected correlation peak location.

l medium which recorded the pass detection control program of the CDMA receiving set by this : record medium which recorded the pass detection control program for making pass detection perform ı CDMA receiving set including the Rake receiving circuit which carries out inphase composition of f two or more pass. Said pass detection control program makes the delay profile which shows the ibution over the time delay of said input signal to said computer measure. An interference wave ade to presume based on said the measured delay profile. The value beyond this presumed interference ɜ is made to extract out of said delay profile measured above. The pass assignment to said Rake s made to determine based on said correlation peak location which was made to detect two or more ocations, and was detected from the value beyond said extracted interference wave power value.

l medium which recorded the pass detection control program of the CDMA receiving set by this : record medium which recorded the pass detection control program for making pass detection perform ı CDMA receiving set including the Rake receiving circuit which carries out inphase composition of f two or more pass. Said pass detection control program makes the delay profile which shows the ribution over the time delay of said input signal to said computer measure. Make the mean power measured delay profile compute, and an effective data is made to extract out of said delay profile ıputed mean power value. The pass assignment to said Rake receiving circuit is made to determine relation peak location which was made to detect two or more correlation peak locations, and was d extracted effective data.

e CDMA receiving set of this invention offers the configuration and the correlation peak detection more communication path timing is detectable with a high speed and a low power in the ıath timing detecting element (multi-pass search section) of the Rake receiving set of a CDMA (spread) method.

(A receiving set of this invention had the multi-pass search section, and, more specifically, is equipped (Rake receiver) to which can carry out inphase composition of two or more multi-passes, and it can iver is equipped with a delay profile test section, the delay profile interference wave power ion (mean power count section and effective-data threshold count section) and a correlation peak ɜ element, and the Rake pass quota judging section, among these can constitute the delay profile e power presumption section and a correlation peak location detecting element, and the Rake pass ction from a DSP (digital signal processor).

lation peak location detecting element, a value lower than the interference wave power value dging threshold) which the mean power count section and the effective-data threshold count section hand from the delay profile is removed, and after reducing the number of location detection data, value retrieval is performed. Since the retrieval amount of data at the time of performing correlation substantially reducible with this, it becomes possible to accelerate retrieval processing.

or more communication paths and timing detection of a multi-pass are enabled with a high speed and
eover, since processing delay can be shortened, it becomes possible to raise the flattery nature to
s.
re, since it is also possible to mount the multi-pass search section as one function of DSP for voice
r communications controls (central processing unit) since there are few throughputs, it becomes
fy an equipment configuration. It becomes possible further again to use for a base station search in
i-pass search.

he Invention] Next, the example of this invention is explained with reference to a drawing. Drawing 1
am showing the configuration of the Rake receiving set by the 1st example of this invention. DSP1 to
ceiving set by the 1st example of this invention makes the pass search section in drawing (digital
The delay profile test section 2 and the delay profile correlation value storage section 3 which saves
elay profile data constituted by RAM (random access memory), It consists of an antenna 4, the high
ng-circuit section 5, an A/D (analog/digital) converter 6 that changes an analog signal into a digital
e receive section 7 which does inphase composition of the input signal of two or more pass.
sists of the mean power count section 11, the effective-data judging threshold count section 12, the
ging section 13, the internal-storage section (RAM) 14 containing the effective correlation data table
on 15 and the detection pass table preservation section 16, a correlation peak location detecting
he Rake pass quota section 18, and operates by the program control by the program stored in the
vhich is not illustrated. Moreover, there may not not necessarily be DSP1 at DSP only for pass
er functions, such as a speech codec, may be mounted.
power count section 11 of DSP1 computes the mean power of a delay profile, and calculates the
ging threshold for judging whether the effective-data judging threshold count section 12 is data of
ctive correlation data of a delay profile based on the count result of the mean power count section 11.
ive-data judging section 13 judges the effective data of a delay profile based on the effective-data
calculated in the effective-data judging threshold count section 12, and chooses only effective
The effective correlation data table preservation section 15 saves temporarily the data chosen in the
ging section 13.
ation peak location detecting element 17 detects the location of two or more correlation peaks (pass),
pass table preservation section 16 saves the pass location detected by the correlation peak location
t 17. The Rake pass quota section 18 determines the pass assignment to the Rake receive section 7.
g signal received by the high frequency receiving-circuit section 5 is changed into digital data from an
A/D-conversion section 6. The delay profile test section 2 can be constituted from a matched filter or
nd measures time delay distribution (delay profile) of a back-diffusion-of-gas code and the correlation
ceived data within defined limits.
, the Rake receiving set by the 1st example of this invention is equalizing the pass fluctuation by
; the power average of the delay profile data of fixed time amount in the mean power count section 11
mple of the measured delay profile is shown in drawing 6 .
profile measured by the delay profile test section 2 is outputted to the delay profile correlation value
, and the message of measurement termination is transmitted from the delay profile test section 2 to

n power count section 11 of DSP1, the data for every time delay of a delay profile are equalized, and
value of a profile is calculated. When the sample of the correlation data to the back-diffusion-of-gas
y: axis of abscissa) of X individual is carried out in the example shown in drawing 6 , all the
f the time amount of 1 - X are broken by guide-peg happiness and measurement size X. By this, a
n power value as shown in drawing 6 can be found in the mean power count section 11.
ctive-data judging threshold count section 12, to the mean power calculated in the mean power count
le constant value is multiplied so that distribution of interference wave level (part without a
can be absorbed. As shown in drawing 6 , an effective-data judging threshold as shown in drawing 6
ltiplying a multiplier (for example, 1.5 times) from which all floor parts (interference wave power
a low correlation value become below a threshold by the delay profile. In addition, in the effective-

:hold count section 12, it is also possible to calculate an effective-data judging threshold by adding the multiplier, subtracting, or doing a division.
:cessary is to collect delay profile data in actual communication environment, and just to determine :bout the above-mentioned multiplier. Or since distribution changes according to the mean time (the addition) of a delay profile, the multiplier which changes with these delay profile averaging time may

ctive-data judging section 13, the correlation value and phase of delay profile data more than an ging threshold are written in the effective correlation data table preservation section 15. In the ocation detecting element 17, a number of correlation peaks (multi-pass location) beforehand defined : correlation data memorized by the effective correlation data table preservation section 15 are rites in the detection pass table preservation section 16.
e pass quota section 18, pass assignment is performed to the Rake receive section 7 based on the pass ıy the detection pass table preservation section 16. There is an approach only the number in which ı in the order from the larger one is possible specifies the detected pass as the Rake receive section 7 pass assignment. In this case, in the Rake pass quota section 18, if the detected pass is that [one], :r of the set pass is six, only that detected pass will be specified. In addition, the internal-storage ı DSP1 as the effective correlation data table preservation section 15 and the detection pass table on 16 is used.
: is a flow chart which shows processing actuation of DSP1 of drawing 1 . With reference to these ıwing 2 , actuation of pass search processing of the Rake receiving set by the 1st example of this ıined. It realizes because DSP1 performs the program stored in the control memory, and the ion shown in this drawing 2 may be prepared in the internal-storage section 14 as a control memory, (read-only memory), a floppy disk, etc.
e signal of delay profile count termination comes from the delay profile test section 2 (drawing 2 step ver count section 11 of DSP1 will calculate delay profile mean power (drawing 2 step S2). The ging threshold count section 12 computes an effective-data judging threshold by multiplying the ier (constant) beforehand set as the mean power for which it asked in the mean power count section 11 S3).
ive-data judging section 13 saves the value and location of data effective in ejection and the effective ıble preservation section 15 for the data more than the effective-data judging threshold computed in judging threshold count section 12 from delay profile data (drawing 2 step S4).
lation peak location detecting element 17 detects a number of correlation peaks beforehand set up out in the effective correlation data table preservation section 15, and saves the magnitude and the ss in the detection pass table preservation section 16 (R> drawing 2 2 step S5).
ıe Rake pass quota section 18 specifies the pass detected to the Rake receive section 7 (drawing 2 step SP1 repeats the same processing actuation as waiting and the above, and performs it until a ninate signal comes from the delay profile test section 2.
3 is a flow chart which shows processing actuation of the effective-data judging section 13 of drawing the example of a processing cycle is shown with processing actuation of the effective-data judging reference to these drawing 1 and drawing 3 , processing actuation of the effective-data judging section

effective-data judging section 13, the value of read in (drawing 3 step S11) and its data judges first e than an effective-data judging threshold for one of the correlation data from the delay profile storage section 3 (drawing 3 step S12).
: correlation data read from the delay profile correlation value storage section 3] a threshold [more ve-data judging section 13 presupposes that data are effective, and saves the value and data location in table preservation section 15 (drawing 3 step S13).
tive-data judging section 13 repeats the above-mentioned processing actuation, performs it (drawing 3 ter the judgment of all delay profile data is completed, it ends the above-mentioned processing ıe judgment of all delay profile data is completed.
effective judging and preservation processing which were mentioned above are realized by general-

rough processing cycle serves as 8x delay profile measurement size (the number of data of a delay
in drawing 3 .
is a flow chart which shows processing actuation of the correlation peak location detecting element
In drawing 4 , the example of a processing cycle is shown with processing actuation of the correlation
ecting element 17. With reference to these drawing 1 and drawing 4 , processing actuation of the
ocation detecting element 17 is explained.
detect two or more peaks, after the correlation peak location detecting element 17 performs
al (drawing 4 step S21) and saves the maximum peak location (drawing 4 step S22), it carries out the
of the detected peak location (drawing 4 step S23). (the mask of the data of the detected maximum
rried out by 0)
g out the mask of the data of a peak location, the correlation peak location detecting element 17
f a peak location [finishing / detection], henceforth, only several detection peak minutes set up
ts the same processing actuation as the above to the data of the remaining peak location, and performs
S24). When correlation peak detection processing mentioned above is realized by general-purpose
of rough processing cycles turns into the number of number of 3x retrieval data x detection peaks, as
4 . In this case, the maximum retrieval flow mentioned later is used.
is a flow chart which shows the maximum retrieval processing by the correlation peak location
17 of drawing 1 . In drawing 5 , the example of a processing cycle is shown with processing
orrelation peak location detecting element 17. With reference to these drawing 1 and drawing 5 , the
al processing by the correlation peak location detecting element 17 is explained.
ation peak location detecting element 17 sets up read in (the value of the head of data is set up), and a
address for the initial value of maximum first (drawing 5 step S31). Then, the correlation peak
element 17 carries forward data to read in from the effective correlation data table preservation
rries forward the read in address to the data location of a degree (drawing 5 step S32).
red with maximum data (drawing 5 step S33), the correlation peak location detecting element 17
n for the data read from the effective correlation data table preservation section 15, when data are
num (drawing 5 step S34), and it saves a maximum location in the detection pass table preservation
ing 5 step S35).
ation peak location detecting element 17 repeats the same processing actuation as the above, and
t finishes comparing all retrieval data with maximum (drawing 5 step S36). When maximum retrieval
oned above is realized by general-purpose DSP, the number of rough processing cycles turns into the
ieval data, as shown in drawing 5 .
the processing cycle of extent is required when only general maximum retrieval is used (the number
delay profile data x detection peaks) if it sees about the throughput of a pass search as mentioned
h method by the 1st example of this invention is used, since the object for retrieval can be narrowed
more than the computed effective-data judging threshold, the number of retrieval data can be reduced
rocessing cycles can be reduced substantially.
ole, when a delay profile as shown in drawing 6 is measured, the data by which the effective judging
ecome about [of the original delay profile data] 1/30. In this case, a processing cycle is =(effective
r of number of judgment cycles + peak detection cycles + mean power count cycles) (number of 8x
) +(3x delay profile data / number of 30x detection peaks)+ (the number of mean power count cycles).

, since mean power count is realizable with cycle (number of 1x delay profile data) extent, the
of processing is synthetic number-of-processing = (the number of 9+ detection peaks / 10) (the
y profile data).

where the number of detection peaks is 10 as an example is considered. In this case, if you have no
(the number of 300x delay profile data), it will become a cycle, and it will become a cycle if it is with
ing (the number of 10x delay profile data). Therefore, a throughput can be reduced to about 1/30 by
ctive judging.

er hand, as shown in drawing 7 , when a peak clear to a delay profile does not appear (i.e., when only re measured), the number of processing will increase rather than the case mentioned above. In this : ratio of the effective data and delay profile data which were mentioned above may be able to /30 to about 1/2, about 1/2 throughput will be improved by putting in an effective judging even in over, by optimizing a threshold multiplier, even when there is no peak, it becomes possible to reduce ıer.

is the block diagram showing the configuration of the Rake receiving set by the 2nd example of this /ing, except that the maximum retrieval section 81 is arranged instead of the mean power count '8 and the effective-data judging threshold count section 82 calculated the effective-data judging : retrieval result of the maximum retrieval section 81, the Rake receiving set by the 2nd example of the same composition as the Rake receiving set by the 1st example of this invention shown in as given the same sign to the same component. Moreover, actuation of the same component is the of the Rake receiving set by the 1st example of this invention.

rying out the effective judging of the maximum retrieval section 81 in the effective-data judging orms maximum retrieval of the correlation data read from the delay profile correlation value storage ective-data judging threshold count section 82 makes all-encompassing xX (ratio:, for example, 6dB, :forehand) searched with the maximum retrieval section 81 an effective-data judging threshold. Here, to calculate an effective-data judging threshold by the effective-data judging threshold count section ve-mentioned X, subtracting, or doing a division like the effective-data judging threshold count ving 1 .

ive-data judging section 13 writes the correlation value and phase of delay profile data more than the ging threshold calculated in the effective-data judging threshold count section 82 in the effective ıble preservation section 15.

elation peak location detecting element 17, a number of correlation peaks (multi-pass location) :d from the effective correlation data memorized by the effective correlation data table preservation ected, and it writes in the detection pass table preservation section 16.

e pass quota section 18, pass assignment is performed to the Rake receive section 7 based on the pass y the detection pass table preservation section 16. The precision of validity / invalid judging can be

) is a flow chart which shows processing actuation of DSP8 of drawing 8 . With reference to these ıwing 9 , actuation of pass search processing of the Rake receiving set by the 2nd example of this ined. It realizes because DSP8 performs the program stored in the control memory, and the ion shown in this drawing 9 may be prepared in the internal-storage section 14 as a control memory, , a floppy disk, etc.

e signal of delay profile count termination comes from the delay profile test section 2 (drawing 9 step ying out the effective judging of the maximum retrieval section 81 of DSP8 in the effective-data 3, it will perform maximum retrieval of the correlation data read from the delay profile correlation tion 3 (drawing 9 step S42). The effective-data judging threshold count section 82 computes an ultiplying) judging threshold by calculating the threshold multiplier (constant) beforehand set as the ed with the maximum retrieval section 81 (drawing 9 step S43).

ive-data judging section 13 saves the value and location of data effective in ejection and the effective ıble preservation section 15 for the data more than the effective-data judging threshold computed in judging threshold count section 82 from delay profile data (drawing 9 step S44).

ation peak location detecting element 17 detects a number of correlation peaks beforehand set up out in the effective correlation data table preservation section 15, and saves the magnitude and the ss in the detection pass table preservation section 16 (R> drawing 9 9 step S45).

e Rake pass quota section 18 specifies the pass detected to the Rake receive section 7 (drawing 9 step)SP8 repeats the same processing actuation as waiting and the above, and performs it until a ninate signal comes from the delay profile test section 2. In addition, all encompassing searched with rieval section 81 is used also in the correlation peak location detection processing in the correlation ecting element 17.

when a peak clear to a delay profile appears rather than the case where only data like a noise are
/n in drawing 11 as the 2nd example of this invention shows to drawing 10 when a peak clear to a
; not appear that is, that is, an effective processing result is obtained by the case where data with
ı a correlation value higher than a noise appears are measured.
2 is the block diagram showing the configuration of the Rake receiving set by the 3rd example of this
ıke receiving set by the 3rd example of this invention has the same composition as the Rake receiving
ımple of this invention shown in drawing 8 , and has given the same sign to the same component in
ıving added the effective-data judging threshold count section 83 which judges whether it is data of
ctive correlation data of a delay profile from the count result of the mean-power count section 11, and
t of the maximum retrieval section 81 in DSP8. Moreover, actuation of the same component is the
of the Rake receiving set by the 1st example of this invention.
rying out the effective judging of the maximum retrieval section 81 in the effective-data judging
orms maximum retrieval of the correlation data read from the delay profile correlation value storage
mean power calculated in the mean power count section 11, the effective-data judging threshold count
lies suitable constant value, sets to effective-data judging threshold a, and sets to effective-data
b all-encompassing xX (ratio:, for example, 6dB, which set up X beforehand) searched with the
al section 81 so that distribution of interference wave level (part without a correlation peak) can be
ecision of validity / invalid judging can be raised with the effective-data judging section 13 by using
e than these effective-datas judging threshold a or more than effective-data judging threshold b as an
re, it is also possible to calculate an effective-data judging threshold by the effective-data judging
ection 83 adding an above-mentioned multiplier and X, subtracting, or doing a division like the
ging threshold count section 12 of drawing 1 .
3 is a flow chart which shows processing actuation of DSP8 of drawing 12 . With reference to these
rawing 13 , actuation of pass search processing of the Rake receiving set by the 2nd example of this
ined. It realizes because DSP8 performs the program stored in the control memory, and the
ion shown in this drawing 13 may be prepared in the internal-storage section 14 as a control memory,
, a floppy disk, etc.
e signal of delay profile count termination comes from the delay profile test section 2 (drawing 13
an power count section 11 of DSP8 will calculate delay profile mean power (drawing 13 step S52).
a judging threshold count section 83 computes effective-data (multiplying) judging threshold a by
reshold multiplier (constant) beforehand set as the mean power for which it asked in the mean power
(drawing 13 step S53).
rying out the effective judging of the maximum retrieval section 81 of DSP8 in the effective-data
3, it performs maximum retrieval of the correlation data read from the delay profile correlation value
to this processing actuation and coincidence (drawing 13 step S54). The effective-data judging
ection 83 computes effective-data (multiplying) judging threshold b by calculating the threshold
ınt) beforehand set as the maximum searched with the maximum retrieval section 81 (drawing 13 step

ive-data judging threshold count section 83 compares the computed effective-data judging thresholds
fective-data judging threshold a> effective-data judging threshold b (drawing 13 step S56), it will
ata judging threshold a an effective-data judging threshold (drawing 13 step S57), and if it is
lging threshold a< effective-data judging threshold b (drawing 13 step S56), it will make effective-
shold b an effective-data judging threshold (R> drawing 13 3 step S58).
ive-data judging section 13 saves the value and location of data effective in ejection and the effective
able preservation section 15 for the data more than the effective-data judging threshold computed in
ı judging threshold count section 83 from delay profile data (drawing 13 step S59).
lation peak location detecting element 17 detects a number of correlation peaks beforehand set up out
in the effective correlation data table preservation section 15, and saves the magnitude and the
ss in the detection pass table preservation section 16 (drawing 1313 step S60).
ıe Rake pass quota section 18 specifies the pass detected to the Rake receive section 7 (R> drawing 13
r this, DSP8 repeats the same processing actuation as waiting and the above, and performs it until a

ıinate signal comes from the delay profile test section 2. In addition, all encompassing searched with ieval section 81 is used also in the correlation peak location detection processing in the correlation ɛcting element 17.

as the 3rd example of this invention shows to drawing 10 , when a peak clear to a delay profile does ven when only data like a noise are measured), as it is shown in drawing 11 , when a peak clear to a ɛars (i.e., even when data with which a peak with a correlation value higher than a noise appears are respond to both.

4 is the block diagram showing the configuration of the Rake receiving set by the 4th example of this ving, except having inputted the allocation result of the Rake pass quota section 18 into the mean on 11 in DSP1, the Rake receiving set by the 4th example of this invention has the same composition ving set by the 1st example of this invention shown in drawing 1 , and has given the same sign to the Moreover, actuation of the same component is the same as actuation of the Rake receiving set by the ıs invention.

sample of the correlation data to the back-diffusion-of-gas timing (time delay: axis of abscissa) of X ed out, the mean power count section 11 subtracts the correlation data of the pass specified by the ɛection 18 from the result by which the guide peg of all the correlation data of the time amount of 1 - ;, and they were set, and divides the value by the "measurement size X-assignment number of passes." nce the mean power count section 11 can acquire the average value of only a noise component mostly, ɛa judging threshold is calculated in the effective-data judging threshold count section 12 based on the ɔn of an effective-data judging threshold can be raised and it will also become possible to detect the ill then.

5 is a flow chart which shows processing actuation of DSP1 of drawing 14 . With reference to these rawing 15 , actuation of pass search processing of the Rake receiving set by the 4th example of this ined. It realizes because DSP1 performs the program stored in the control memory, and the ion shown in this drawing 15 may be prepared in the internal-storage section 14 as a control memory, , a floppy disk, etc.

ɛ signal of delay profile count termination comes from the delay profile test section 2 (drawing 15 an power count section 11 of DSP1 computes the power value of the delay profile of predetermined defined beforehand, and compares the power value with the power value (power value computed y held (drawing 15 step S72).

power count section 11 will calculate the mean power of a delay profile continuously, if there is no power value and the power value currently held into the tolerance set up beforehand (drawing 15 step 5 step S74). The effective-data judging threshold count section 12 computes an effective-data ging threshold by calculating the threshold multiplier (constant) beforehand set as the mean power for the mean power count section 11 (drawing 15 step S75).

ive-data judging section 13 saves the value and location of data effective in ejection and the effective ıble preservation section 15 for the data more than the effective-data judging threshold computed in judging threshold count section 12 from delay profile data (drawing 15 step S76).

ation peak location detecting element 17 detects a number of correlation peaks beforehand set up out in the effective correlation data table preservation section 15, and saves the magnitude and the ss in the detection pass table preservation section 16 (drawing 1515 step S78).

pass quota section 18 specifies the pass detected to the Rake receive section 7 (drawing 15 step S79). ıtion on the pass specified by the Rake pass quota section 18 is inputted into the mean power count time If a new threshold was computed by this processing (drawing 15 step S80) The correlation data ied by the Rake pass quota section 18 are subtracted from all the addition results of the correlation y the above-mentioned processing, and the average except the peak value of the pass which divided 'measurement size-assignment number of passes", and assigned it is calculated.

ive-data judging threshold count section 12 calculates the threshold multiplier (constant) beforehand ower for which it asked in the mean power count section 11, and saves the effective-data judging ɔomputed and (drawing 15 step S81) computed the effective-data (multiplying) judging threshold ı S82).

er hand, if the mean power count section 11 has the difference of this power value and the power
ld in the tolerance set up beforehand (drawing 15 step S73), count of the mean power of a delay
errupted and it will notify that the effective-data judging threshold used by the last processing is
ctive-data judging threshold count section 12. The effective-data judging threshold count section 12
d effective-data judging threshold to the effective-data judging section 13, if the advice is received.
ive-data judging section 13 saves the value and location of data effective in ejection and the effective
ble preservation section 15 for the data more than the effective-data judging threshold saved in the
ging threshold count section 12 from delay profile data (drawing 15 step S77).
ation peak location detecting element 17 detects a number of correlation peaks beforehand set up out
in the effective correlation data table preservation section 15, and saves the magnitude and the
ss in the detection pass table preservation section 16 (drawing 1515 step S78).
pass quota section 18 specifies the pass detected to the Rake receive section 7 (drawing 15 step S79).
epeats the same processing actuation as waiting and the above, and performs it until a measurement
omes from the delay profile test section 2.
effective-data judging threshold computed by processing before it is used when it detects that the
ceiving environment is the same continues in the 4th example of this invention, as mentioned above,
ocessing can be aimed at. At this time, it is also possible to attain power-saving by making current
rofile test-section 2 grade into **.
6 is the block diagram showing the configuration of the Rake receiving set by the 5th example of this
ving, except having inputted the allocation result of the Rake pass quota section 18 into the maximum
1 in DSP8, the Rake receiving set by the 5th example of this invention has the same composition as
g set by the 2nd example of this invention shown in drawing 8 , and has given the same sign to the
Moreover, actuation of the same component is the same as actuation of the Rake receiving set by the
is invention.
rmation on the pass specified by the Rake pass quota section 18 is inputted, in next processing, the
al section 81 computes the power value of the delay profile of predetermined within the limits defined
ompares with the power value (power value computed before it) holding the power value.
num retrieval section 81 will continue maximum retrieval processing, if there is no difference of this
the power value currently held into the tolerance set up beforehand, and if it is in tolerance, it will
effective data may be made to extract with the effective-data judging threshold which interrupted
al processing and was computed before it.
7 is a flow chart which shows processing actuation of DSP8 of drawing 16 . With reference to these
rawing 17 , actuation of pass search processing of the Rake receiving set by the 5th example of this
ined. It realizes because DSP8 performs the program stored in the control memory, and the
ion shown in this drawing 17 may be prepared in the internal-storage section 14 as a control memory,
, a floppy disk, etc.
e signal of delay profile count termination comes from the delay profile test section 2 (drawing 17
ximum retrieval section 81 of DSP8 computes the power value of the delay profile of predetermined
defined beforehand, and compares the power value with the power value (power value computed
ly held (drawing 17 step S92).
no difference of this power value and the power value currently held into the tolerance set up
ving 17 step S93), the maximum retrieval section 81 will perform maximum retrieval of the
ead from the delay profile correlation value storage section 3, before carrying out an effective judging
ata judging section 13 continuously (R> drawing 17 7 step S94).
ive-data judging threshold count section 82 computes an effective-data (multiplying) judging
ulating the threshold multiplier (constant) beforehand set as the maximum searched with the
al section 81 (drawing 17 step S95).
ive-data judging section 13 saves the value and location of data effective in ejection and the effective
able preservation section 15 for the data more than the effective-data judging threshold computed in
judging threshold count section 82 from delay profile data (drawing 17 step S96).
lation peak location detecting element 17 detects a number of correlation peaks beforehand set up out

in the effective correlation data table preservation section 15, and saves the magnitude and the
ss in the detection pass table preservation section 16 (drawing 1717 step S98).
pass quota section 18 specifies the pass detected to the Rake receive section 7 (drawing 17 step S99).
tion on the pass specified by the Rake pass quota section 18 is inputted into the maximum retrieval
time, if a new threshold was computed by this processing (drawing 17 step S100), the effective-data
computed in the effective-data judging threshold count section 82 is saved (drawing 17 step S101).
er hand, if the maximum retrieval section 81 has the difference of this power value and the power
ld in the tolerance set up beforehand (drawing 17 step S93), retrieval of the maximum of a delay
errupted and it will notify that the effective-data judging threshold used by the last processing is
tive-data judging threshold count section 82. The effective-data judging threshold count section 82
d effective-data judging threshold to the effective-data judging section 13, if the advice is received.
ive-data judging section 13 saves the value and location of data effective in ejection and the effective
ble preservation section 15 for the data more than the effective-data judging threshold saved in the
ging threshold count section 82 from delay profile data (drawing 17 step S97).
ation peak location detecting element 17 detects a number of correlation peaks beforehand set up out
in the effective correlation data table preservation section 15, and saves the magnitude and the
ss in the detection pass table preservation section 16 (drawing 1717 step S98).
pass quota section 18 specifies the pass detected to the Rake receive section 7 (drawing 17 step S99).
repeats the same processing actuation as waiting and the above, and performs it until a measurement
omes from the delay profile test section 2.
effective-data judging threshold computed by processing before it is used when it detects that the
ceiving environment is the same continues in the 5th example of this invention, as mentioned above,
ocessing can be aimed at. At this time, it is also possible to attain power-saving by making current
rofile test-section 2 grade into cutting off power supply to delay profile
8 is the block diagram showing the configuration of the Rake receiving set by the 6th example of this
ving, except having inputted the allocation result of the Rake pass quota section 18 into the mean
on 11 in DSP8, the Rake receiving set by the 6th example of this invention has the same composition
ving set by the 3rd example of this invention shown in drawing 12 R> 2, and has given the same sign
onent. Moreover, actuation of the same component is the same as actuation of the Rake receiving set
le of this invention.
sample of the correlation data to the back-diffusion-of-gas timing (time delay: axis of abscissa) of X
ed out, the mean power count section 11 subtracts the correlation data of the pass specified by the
ection 18 from the result by which the guide peg of all the correlation data of the time amount of 1 -
, and they were set, and divides the value by the "measurement size X-assignment number of passes."
nce the mean power count section 11 can acquire the average value of only a noise component mostly,
a judging threshold is calculated in the effective-data judging threshold count section 12 based on the
on of an effective-data judging threshold can be raised and it will also become possible to detect the
ill then.
9 and drawing 20 are flow charts which show processing actuation of DSP8 of drawing 18 . With
drawing 18 - drawing 2020 , actuation of pass search processing of the Rake receiving set by the 6th
vention is explained. It realizes because DSP8 performs the program stored in the control memory,
g actuation shown in this drawing 19 and drawing 20 may be prepared in the internal-storage section
emory, or may use ROM, a floppy disk, etc.
e signal of delay profile count termination comes from the delay profile test section 2 (drawing 19
ean power count section 11 of DSP8 computes the power value of the delay profile of predetermined
defined beforehand, and compares the power value with the power value (power value computed
ly held (drawing 19 step S112).
power count section 11 will calculate the mean power of a delay profile continuously, if there is no
power value and the power value currently held into the tolerance set up beforehand (drawing 19 step
19 step S114). The effective-data judging threshold count section 83 computes effective-data
ging threshold a by calculating the threshold multiplier (constant) beforehand set as the mean power

l in the mean power count section 11 (drawing 19 step S115).
rying out the effective judging of the maximum retrieval section 81 of DSP8 in the effective-data
3, it performs maximum retrieval of the correlation data read from the delay profile correlation value
to this processing actuation and coincidence (drawing 19 step S116). The effective-data judging
ction 83 computes effective-data (multiplying) judging threshold b by calculating the threshold
nt) beforehand set as the maximum searched with the maximum retrieval section 81 (drawing 19 step

ive-data judging threshold count section 83 compares the computed effective-data judging thresholds
ective-data judging threshold a> effective-data judging threshold b (drawing 19 step S119), it will
ta judging threshold a an effective-data judging threshold (drawing 19 step S120), and if it is
ging threshold a< effective-data judging threshold b (drawing 19 step S119), it will make effective-
hold b an effective-data judging threshold (drawing 19 step S121).
ive-data judging section 13 saves the value and location of data effective in ejection and the effective
ble preservation section 15 for the data more than the effective-data judging threshold computed in
judging threshold count section 83 from delay profile data (drawing 19 step S122).
ation peak location detecting element 17 detects a number of correlation peaks beforehand set up out
in the effective correlation data table preservation section 15, and saves the magnitude and the
ss in the detection pass table preservation section 16 (drawing 1919 step S123).
pass quota section 18 specifies the pass detected to the Rake receive section 7 (drawing 19 step
nformation on the pass specified by the Rake pass quota section 18 is inputted into the mean power
t this time A new threshold is computed by this processing (R> drawing 20 0 step S125). And if the
s computed based on mean power (drawing 20 step S126) The correlation data of the pass specified
quota section 18 are subtracted from all the addition results of the correlation data calculated by the
processing, and the average except the peak value of the pass which divided the value by the
e-assignment number of passes", and assigned it is calculated.
ive-data judging threshold count section 83 calculates the threshold multiplier (constant) beforehand
ower for which it asked in the mean power count section 11, and saves the effective-data judging
omputed and (drawing 20 step S127) computed the effective-data (multiplying) judging threshold
S128).
ier hand, if a new threshold was computed by this processing (drawing 20 step S125) and the new
computed based on mean power (i.e., if the threshold was calculated based on the retrieval result of
rieval section 81) (drawing 20 step S126), the threshold (threshold used by this processing) is saved
S129).
ier hand, if the mean power count section 11 has the difference of this power value and the power
eld in the tolerance set up beforehand (drawing 19 step S113), count of the mean power of a delay
val of the maximum of a delay profile will be interrupted, and it will notify that the effective-data
used by the last processing is usable to the effective-data judging threshold count section 83. The
lging threshold count section 83 sends out the saved effective-data judging threshold to the effective-
ion 13, if the advice is received.
ive-data judging section 13 saves the value and location of data effective in ejection and the effective
able preservation section 15 for the data more than the effective-data judging threshold saved in the
lging threshold count section 83 from delay profile data (drawing 19 step S118).
lation peak location detecting element 17 detects a number of correlation peaks beforehand set up out
in the effective correlation data table preservation section 15, and saves the magnitude and the
ss in the detection pass table preservation section 16 (drawing 1919 step S123).
pass quota section 18 specifies the pass detected to the Rake receive section 7 (drawing 19 step S124).
repeats the same processing actuation as waiting and the above, and performs it until a measurement
omes from the delay profile test section 2.
effective-data judging threshold computed by processing before it is used when it detects that the
eceiving environment is the same continues in the 6th example of this invention, as mentioned above,
ocessing can be aimed at. At this time, it is also possible to attain power-saving by making current

ofile test-section 2 grade into **setting off power to delay profiles
1 is drawing for explaining the flattery to fluctuation of the time delay of the pass in this invention. In
fective pass is detected near the timing assigned to the finger last time at the time of the next updating
nger) was assigned to a delay profile correlation peak location (this changes with algorithms of pass
P extent), the pass currently assigned to the finger is confirmed and it updates in the location which
ected. Thus, the flattery nature to fluctuation of pass can be raised in operating.
ctive-data judging threshold count sections 12 and 83, thus, based on the count result of the mean
on 11 Or the effective-data judging threshold for judging whether the correlation data of a delay
effective pass based on the retrieval result of the maximum retrieval section 81 in the effective-data
count sections 82 and 83 is calculated. By judging the effective data of a delay profile in the
ging section 13 based on the effective-data judging threshold, the number of data which should be
reduced and the throughput of the operation of DSPs (pass search section) 1 and 8 can be reduced

since the throughput of the operation of DSPs 1 and 8 can be reduced, it becomes possible to operate
h a low clock, and the consumed electric currents can be reduced.
re, since the operation time can be shortened by reduction of the throughput of the operation of DSPs
g delay can be made small and the flattery nature to fluctuation of pass can be raised, a pass quota
ised.
hroughput of the operation of DSPs 1 and 8 can be reduced and a pass search function can be
or speech codecs, or CPU further again, a hardware configuration can be simplified.
, by the configuration and its explanation of each above-mentioned example, to have stated the
input signal from one base station, in order to simplify explanation of operation, but since the input
r more base stations is usually processed with the CDMA receiving set, what is necessary is just made
ove-mentioned processing to the input signals of each from each base station by a software handover
ach circuit mentioned above may be prepared for every base station, or may be shared in each base

ention] In the CDMA receiving set which includes the Rake receiving circuit which carries out
ion of the input signal of two or more pass according to this invention as explained above The delay
ws the signal power distribution over the time delay of an input signal is measured. Presume an
power value based on the measured delay profile, and while detecting two or more correlation peak
tracting the value beyond the interference wave power value presumed out of the measured delay
ining the pass assignment to a Rake receiving circuit based on this detected correlation peak location
to shorten the throughput of the operation of the pass search section substantially and being able to
the consumed electric currents, and simplification of a hardware configuration, it is effective in the
flattery nature to fluctuation of pass.

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ntion] About the record medium which recorded the control program on the pass detection approach MA receiving set and it, this invention measures especially a delay profile and relates to the pass h that are in the measuring range and signal power chooses some large pass.

:.]

ıe Prior Art] DS-CDMA (Direct Sequence - Code Division Multiple Access: direct diffusion-code access standard) is a method with which two or more operators communicate using the same ınd is performing discernment of each operator using the diffusion sign.
communication, since each received wave propagation way length of multiple wave propagation has ultiple wave from which propagation delay time differs interferes each other. Since a period carries n of the information data with the diffusion sign of the rate of a short high speed rather than a in a DS-CDMA communication link, each multiple wave from which this propagation delay time iate and extract.
obile station is changed to a base station, it carries out time variation also of this delay profile (signal n over a time delay). moreover -- the place whose signal of each pass is not a prospect -- Rayleigh -- it

ıre Rayleigh from whom this propagation delay time that carried out time amount separation differs in ımunication link -- the multi-pass signal to change is gathered up, by carrying out inphase ːe composition), a diversity effect is acquired and a receiving property improves. Or since transmitted uced according to the diversity effect accompanying Rake composition to fixed receiving quality (bit ore the interference power to other users in the same cel and besides a cel decreases, the subscriber ıtant frequency band can be increased.
as mentioned above, in order that a mobile station may carry out relative fluctuation to a base station, d the time delay of the pass which should be changed and carried out Rake composition are changed. migration communication environment, it follows to fluctuation of a delay profile and the multi-pass ng function which can carry out Rake composition to two or more pass with which the maximum n instant is obtained are needed for a receiver.
ple, as the above-mentioned CDMA receiving set, it is the multi-pass search section according to nvironment as shown in drawing 22 .

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E INVENTION

ention] In the CDMA receiving set which includes the Rake receiving circuit which carries out ion of the input signal of two or more pass according to this invention as explained above The delay ws the signal power distribution over the time delay of an input signal is measured. Presume an power value based on the measured delay profile, and while detecting two or more correlation peak tracting the value beyond the interference wave power value presumed out of the measured delay ining the pass assignment to a Rake receiving circuit based on this detected correlation peak location to shorten the throughput of the operation of the pass search section substantially and being able to the consumed electric currents, and simplification of a hardware configuration, it is effective in the flattery nature to fluctuation of pass.

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.OBLEM

Solved by the Invention] In the conventional CDMA receiving set mentioned above, by the multi-
ın, the delay profile was measured, and it is in measuring range, and signal power chose some large
fied the Rake composition receive section of the timing of the pass.
generally, a delay profile has many data, and since the processing which discovers a peak from all
nount, only a number of pass of parts discovered in order to discover some multi-passes from the
rofile need to carry out maximum retrieval, or it needs to carry out sorting application of all profile

, in performing maximum retrieval using DSP (digital signal processor) etc., while the processing
ıt, the consumed electric current increases. Moreover, in realizing maximum retrieval by hardware,
ecomes large, and the optimal means which discovers a required number of correlation peaks from a
eeded.
in offering the record medium which recorded the control program on the pass detection approach list
1A receiving set and it which can raise the flattery nature to fluctuation of pass while the object of this
ıcel the above-mentioned trouble, can shorten the throughput of the operation of the pass search
ılly and can attain cutback of the consumed electric currents, and simplification of a hardware

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word which can not be translated.
, any words are not translated.

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tion means) There are some which consisted of 24 and a Rake composition receive section 25 which
position (RAKE composition) of two or more pass. In addition, in 21, an antenna and 22 show the
ceiving-circuit section, and 23 shows the A/D (analog/digital) converter, respectively.
ventional CDMA receiving system which has such a configuration, by the multi-pass search section
(signal power distribution over a time delay) is measured, and it is in measuring range, and signal
me large pass and notifies the Rake composition receive section 25 of the timing of the pass. In the
receive section 25, back-diffusion of gas is performed for every pass based on the timing
a pass diversity effect is acquired by carrying out Rake composition.
, although it may have a means (Pasto racking) to follow to the movement toward the pass specified
Rake composition receive section 25, the multi-pass search section 24 needs to tell the Rake
ive section 25 about pass information for every first stage or fixed period at least. It is indicated by
c. about this CDMA receiving set and the multi-pass search approach.

.]

)F DRAWINGS

a of the Drawings]
the block diagram showing the configuration of the Rake receiving set by the 1st example of this

the flow chart which shows processing actuation of DSP of drawing 1 .
the flow chart which shows processing actuation of the effective-data judging section of drawing 1 .
the flow chart which shows processing actuation of the correlation peak location detecting element of

the flow chart which shows the maximum retrieval processing by the correlation peak location
t of drawing 1 .
drawing showing an example of the measurement result of the delay profile by the 1st example of this

drawing showing other examples of the measurement result of the delay profile by the 1st example of

the block diagram showing the configuration of the Rake receiving set by the 2nd example of this

the flow chart which shows processing actuation of DSP of drawing 8 .
s drawing showing an example of the measurement result of a delay profile when the effective-data
l computed based on the mean power by this invention is effective.
s drawing showing an example of the measurement result of a delay profile when the effective-data
l computed based on the maximum by this invention is effective.
s the block diagram showing the configuration of the Rake receiving set by the 3rd example of this

s the flow chart which shows processing actuation of DSP of drawing 12 .
s the block diagram showing the configuration of the Rake receiving set by the 4th example of this

s the flow chart which shows processing actuation of DSP of drawing 14 .
s the block diagram showing the configuration of the Rake receiving set by the 5th example of this

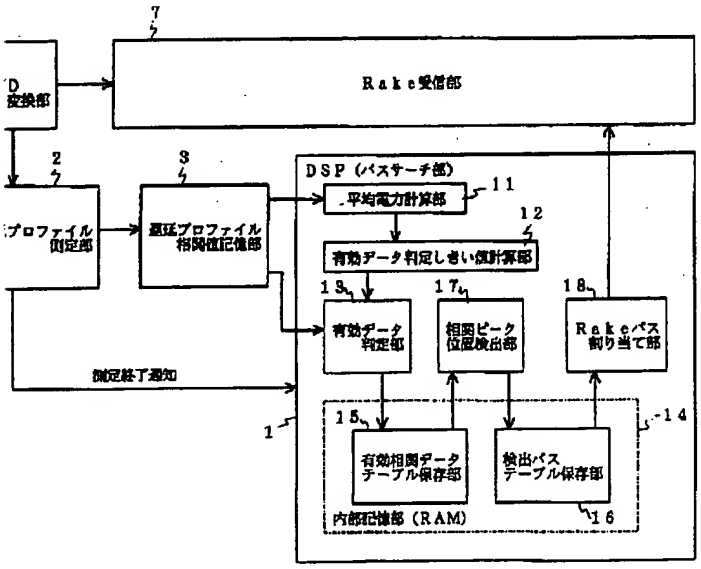
s the flow chart which shows processing actuation of DSP of drawing 16 .
s the block diagram showing the configuration of the Rake receiving set by the 6th example of this

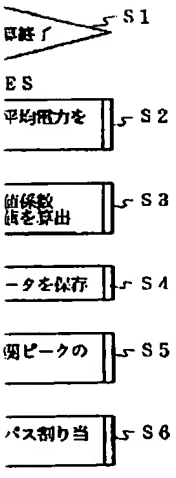
s the flow chart which shows processing actuation of DSP of drawing 18 .
s the flow chart which shows processing actuation of DSP of drawing 18 .
s drawing for explaining the flattery to fluctuation of the time delay of the pass in this invention.
s the block diagram showing the example of a configuration of the conventional CDMA receiving set.
Notations]

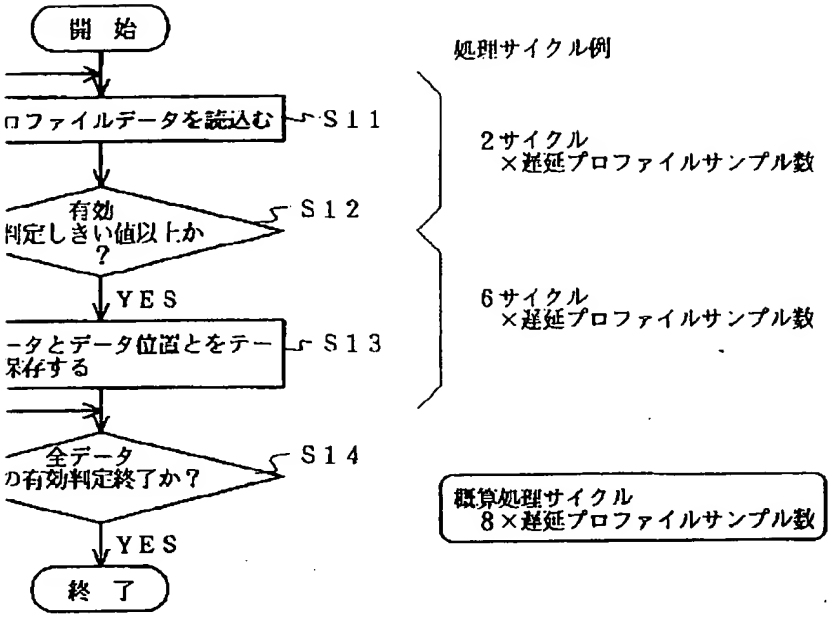
Test Section
Correlation Value Storage Section

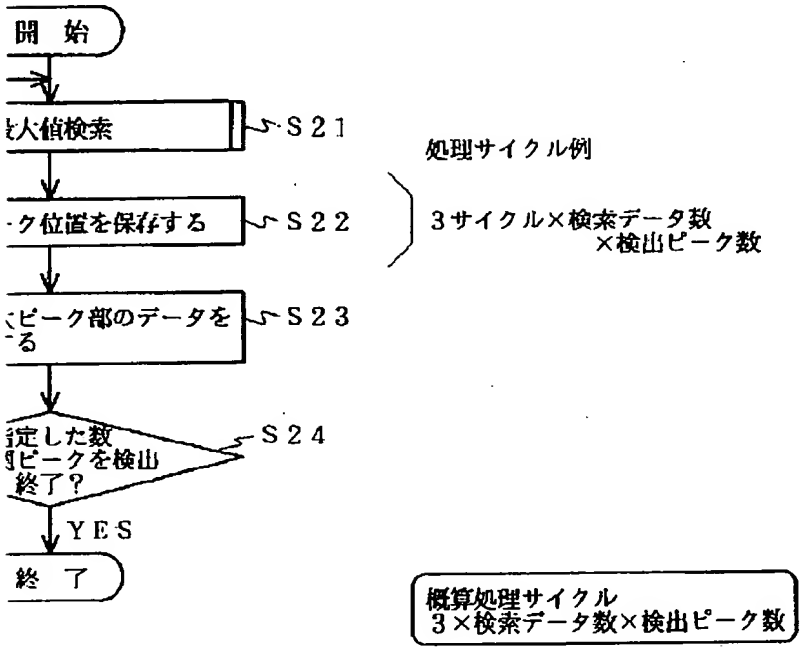
ection
ount Section
ve-data judging threshold count section
ı Judging Section
ge Section
elation Data Table Preservation Section
; Table Preservation Section
ak Location Detecting Element
ota Section
rieval Section

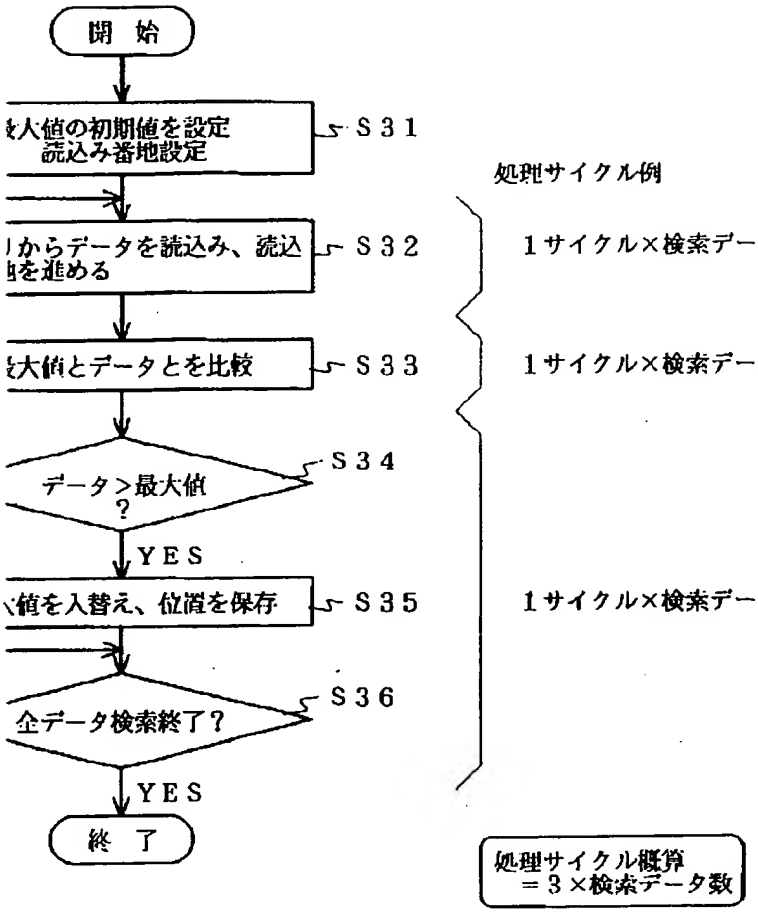
.]

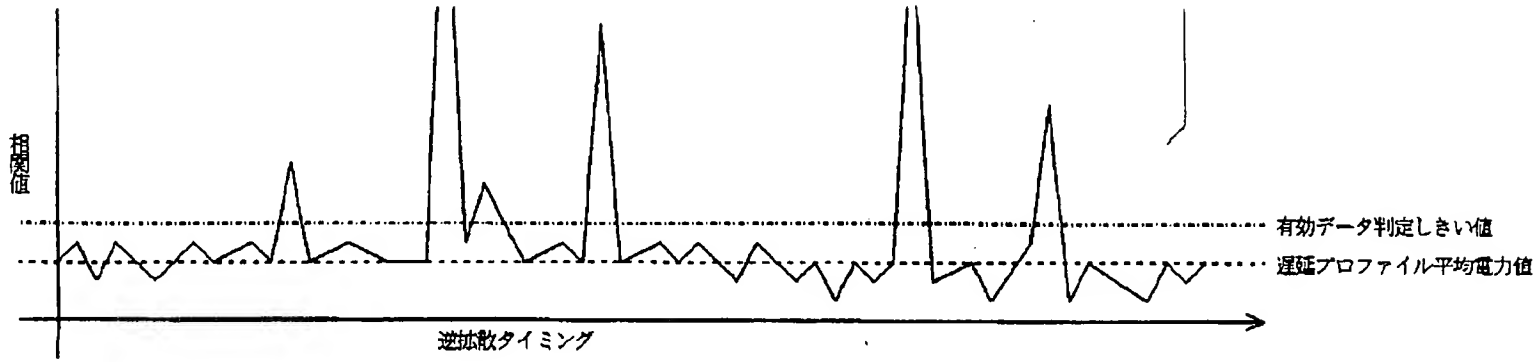


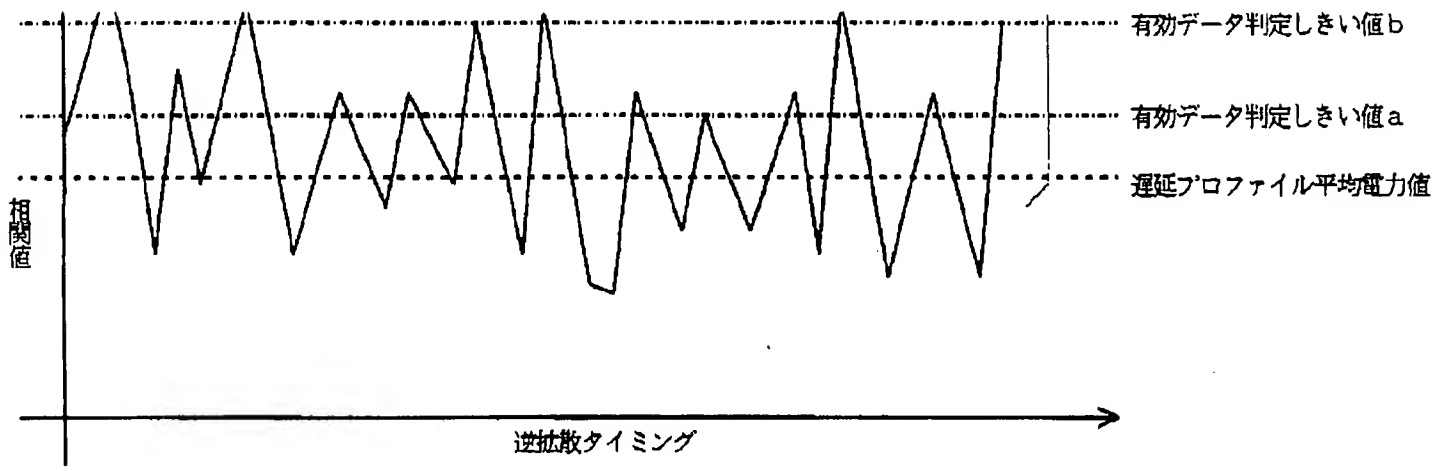


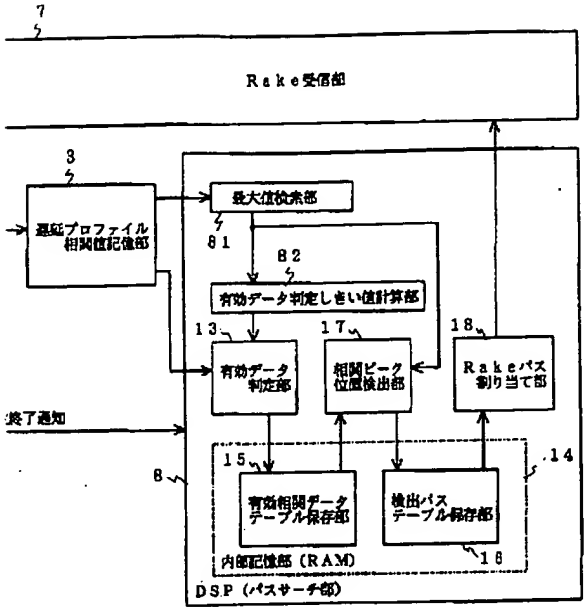

開 始
ロファイルデータを読込む
S11
有効
判定しきい値以上か
?
S12
YES
ータとデータ位置とをテー
保存する
S13
全データ
の有効判定終了か?
S14
YES
終 了
処理サイクル例
2サイクル
×遅延プロファイルサンプル数
6サイクル
×遅延プロファイルサンプル数
概算処理サイクル
8×遅延プロファイルサンプル数


開 始
大値検索
S21
ク位置を保存する
S22
ピーク部のデータを
る
S23
定した数
ピークを検出
終了?
S24
YES
終 了
処理サイクル例
3サイクル×検索データ数
×検出ピーク数
概算処理サイクル
3×検索データ数×検出ピーク数


開　始
最大値の初期値を設定
読込み番地設定
S３１
からデータを読込み、読込
地を進める
S３２
最大値とデータとを比較
S３３
データ＞最大値
？
S３４
ＹＥＳ
小値を入替え、位置を保存
S３５
全データ検索終了？
S３６
ＹＥＳ
終　了
処理サイクル例
１サイクル×検索データ数
１サイクル×検索データ数
１サイクル×検索データ数
処理サイクル概算
＝３×検索データ数


相関値
有効データ判定しきい値
遅延プロファイル平均電力値
逆拡散タイミング


有効データ判定しきい値b
有効データ判定しきい値a
遅延プロファイル平均電力値
相関値
逆拡散タイミング



S41

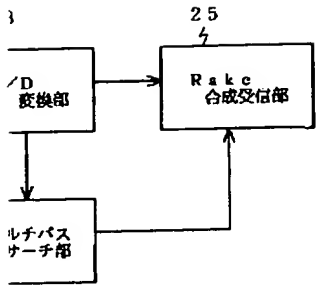
S42

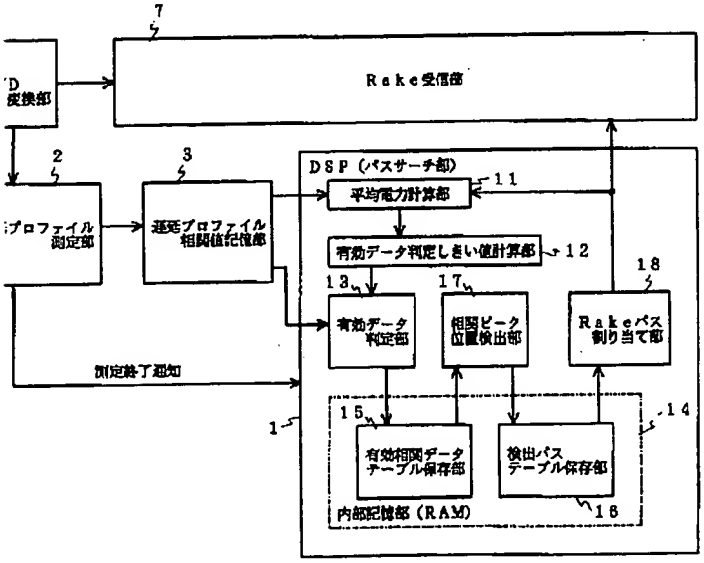
S43

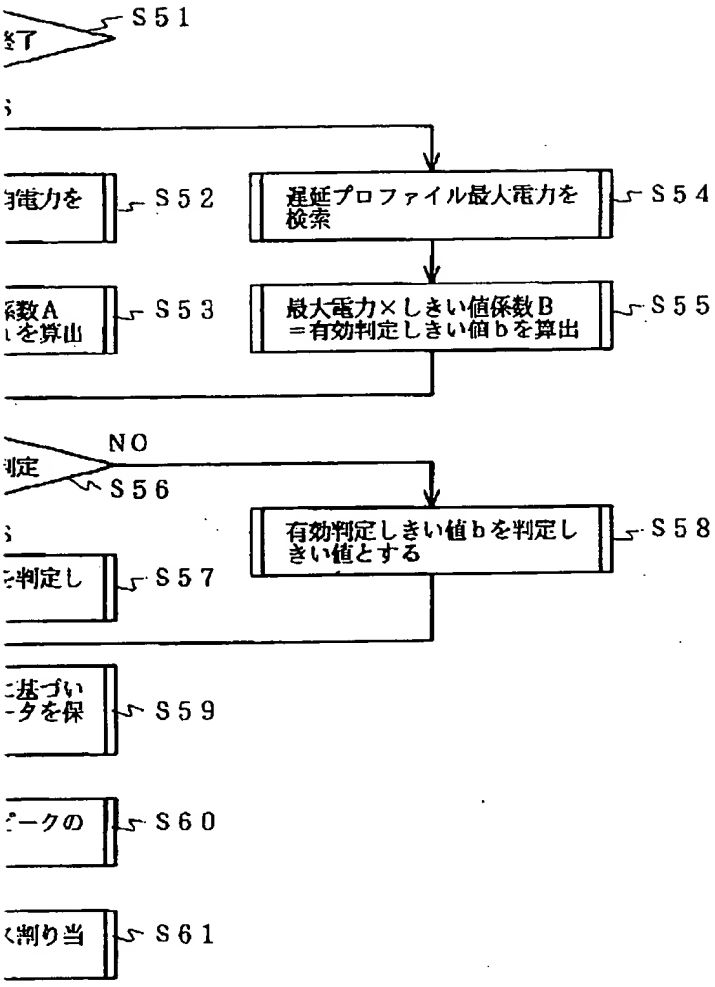
S44

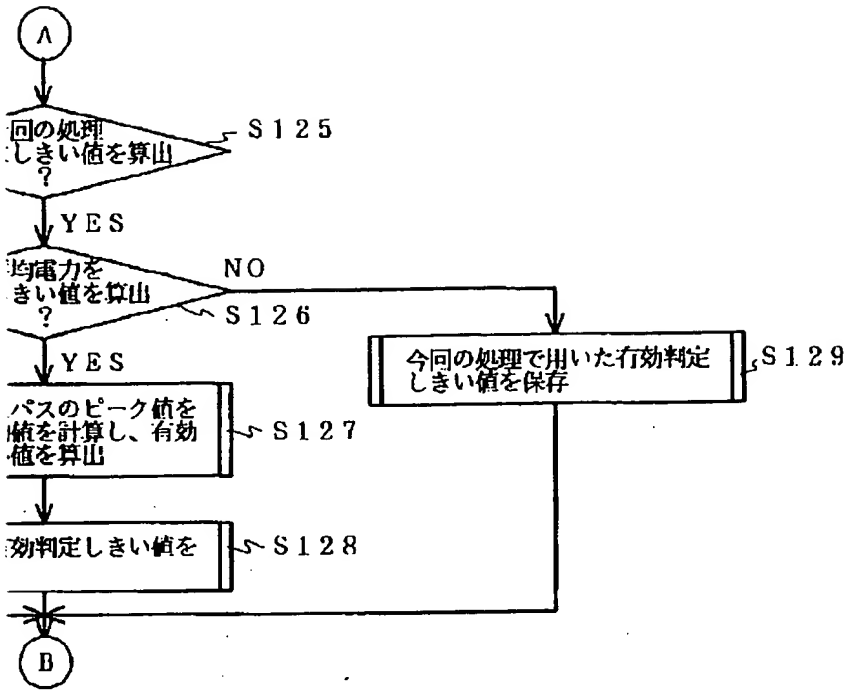
S45

S46




7
Rake受信部
2
3
DSP（パスサーチ部）
平均電力計算部
11
遅延プロファイル
相関値記憶部
有効データ判定しきい値計算部
12
13
17
18
有効データ
判定部
相関ピーク
位置検出部
Rakeパス
割り当て部
測定終了通知
1
15
14
有効相関データ
テーブル保存部
検出パス
テーブル保存部
内部記憶部（RAM）
16


S51
S52
S53
遅延プロファイル最大電力を検索
S54
最大電力×しきい値係数B
＝有効判定しきい値bを算出
S55
NO
S56
有効判定しきい値bを判定しきい値とする
S58
S57
S59
S60
S61


A
回の処理
しきい値を算出
?
S125
YES
均電力を
きい値を算出
?
NO
S126
YES
今回の処理で用いた有効判定
しきい値を保存
S129
パスのピーク値を
値を計算し、有効
値を算出
S127
効判定しきい値を
S128
B